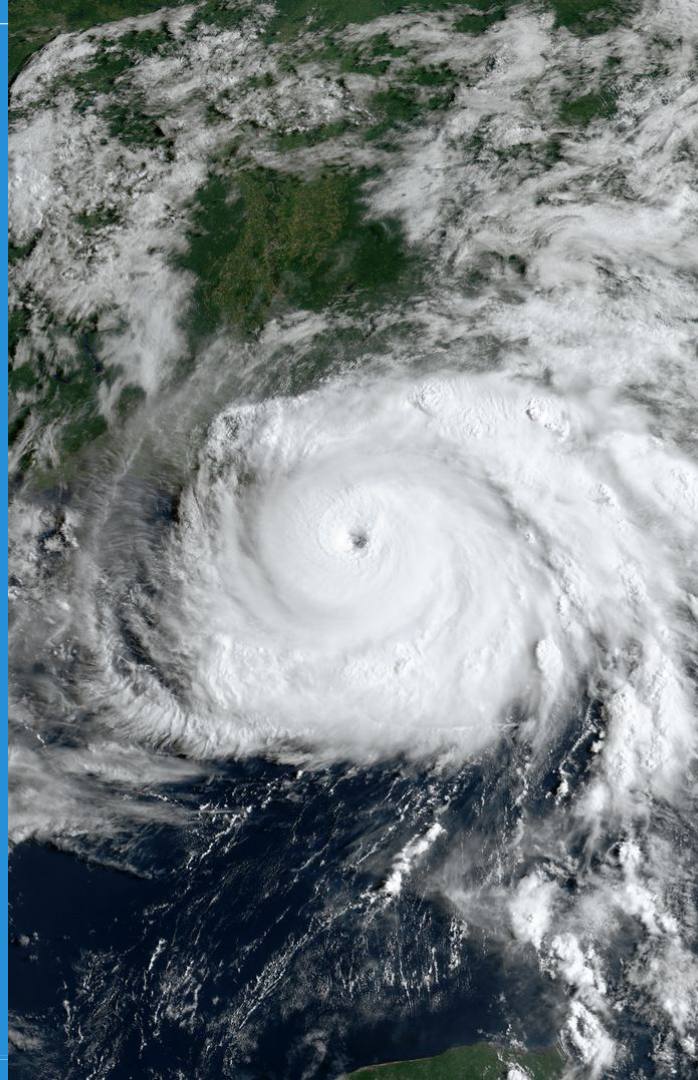
HURRICANE HAZARDS AND COMMUNICATION

2023 HURRICANE SEASON

NATIONAL WEATHER SERVICE
New Orleans/
Baton Rouge

LAUREN NASH
Warning
Coordination
Meteorologist

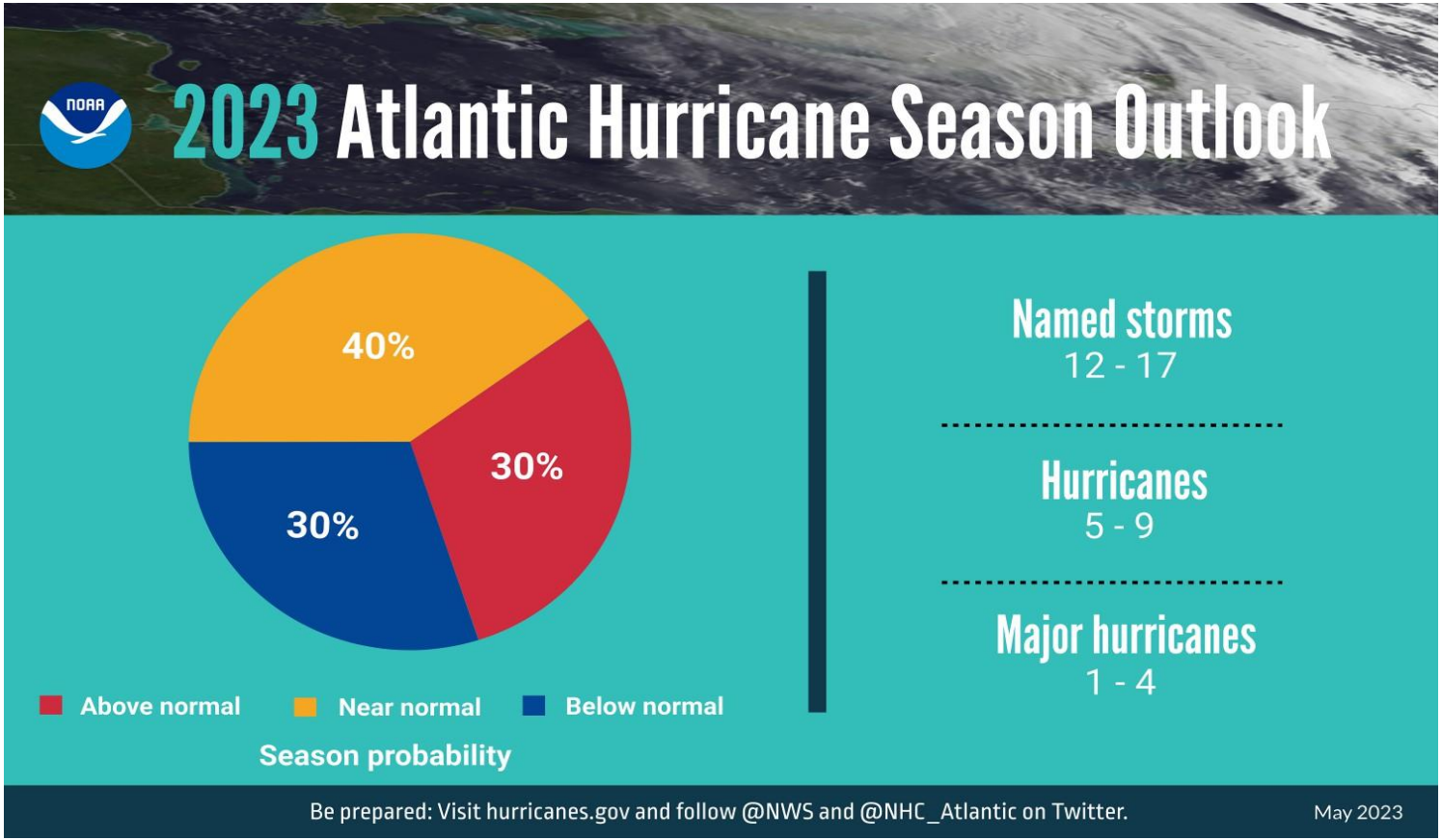


2023 ATLANTIC HURRICANE NAMES

Arlene	Harold	Ophelia
Bret	Idalia	Philippe
Cindy	Jose	Rina
Don	Katia	Sean
Emily	Lee	Tammy
Franklin	Margot	Vince
Gert	Nigel	Whitney

If we run out of names on the main list, we will go to the supplemental list of names, rather than the Greek alphabet

NOAA SEASONAL HURRICANE FORECAST



Average is:

14

7

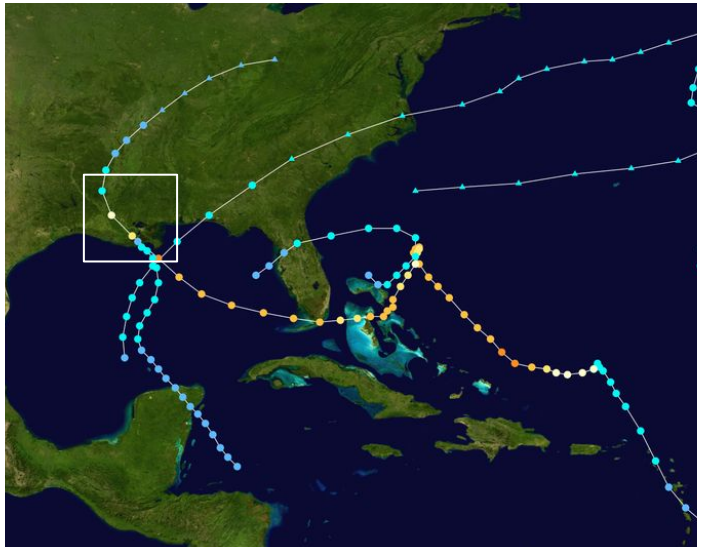
3

Forecast is a SEASONAL and BASIN wide forecast. The forecast is for this whole basin from June 1 to November 30!

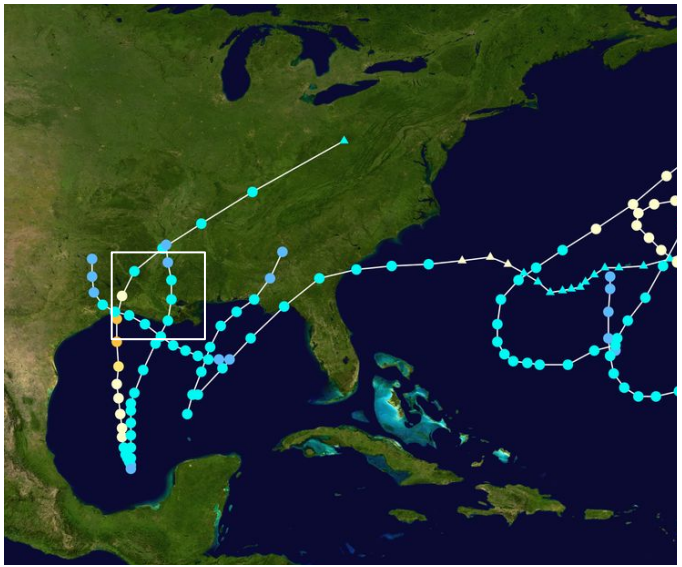
WHAT ABOUT EL NINO???

- We are heading into El Nino: 90+% chance it develops by Fall
    - “Typically” means a quieter hurricane season…
    - There is NO strong correlation between El Nino and slow GULF tropical seasons. **So the storms may not form in the Atlantic, but they can still form in the Gulf!**
    - Last year was La Nina, and we got nothing!
- But sea surface temperatures are also at a record high!

STRONG EL NINO YEARS



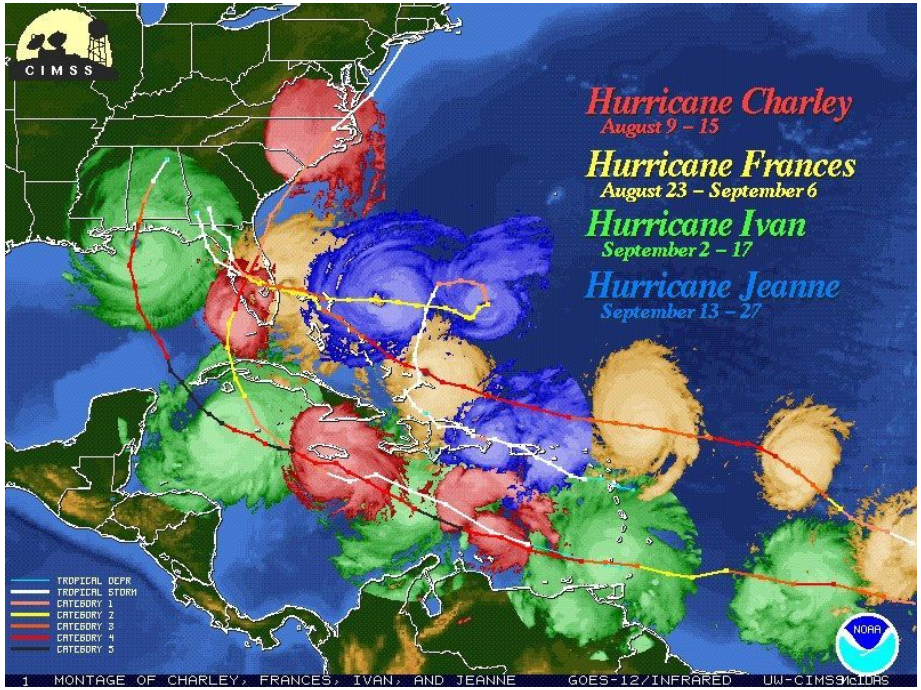
1965



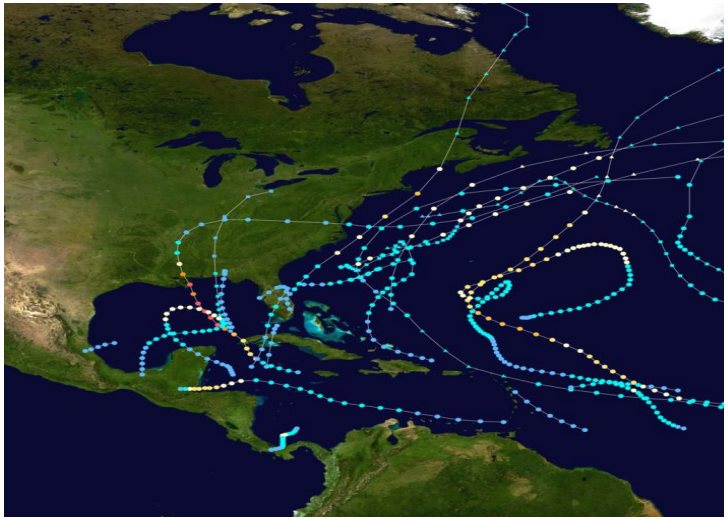
1957

It doesn't matter what the forecast is if that *one* storm hits us!

SIMILAR SEA SURFACE TEMP YEARS AS WHAT IS FORECAST



2004

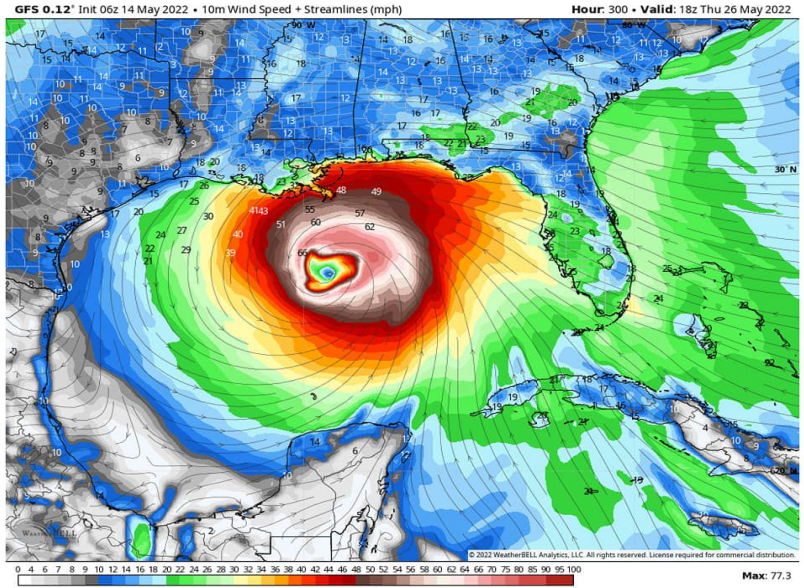


1969- Camille

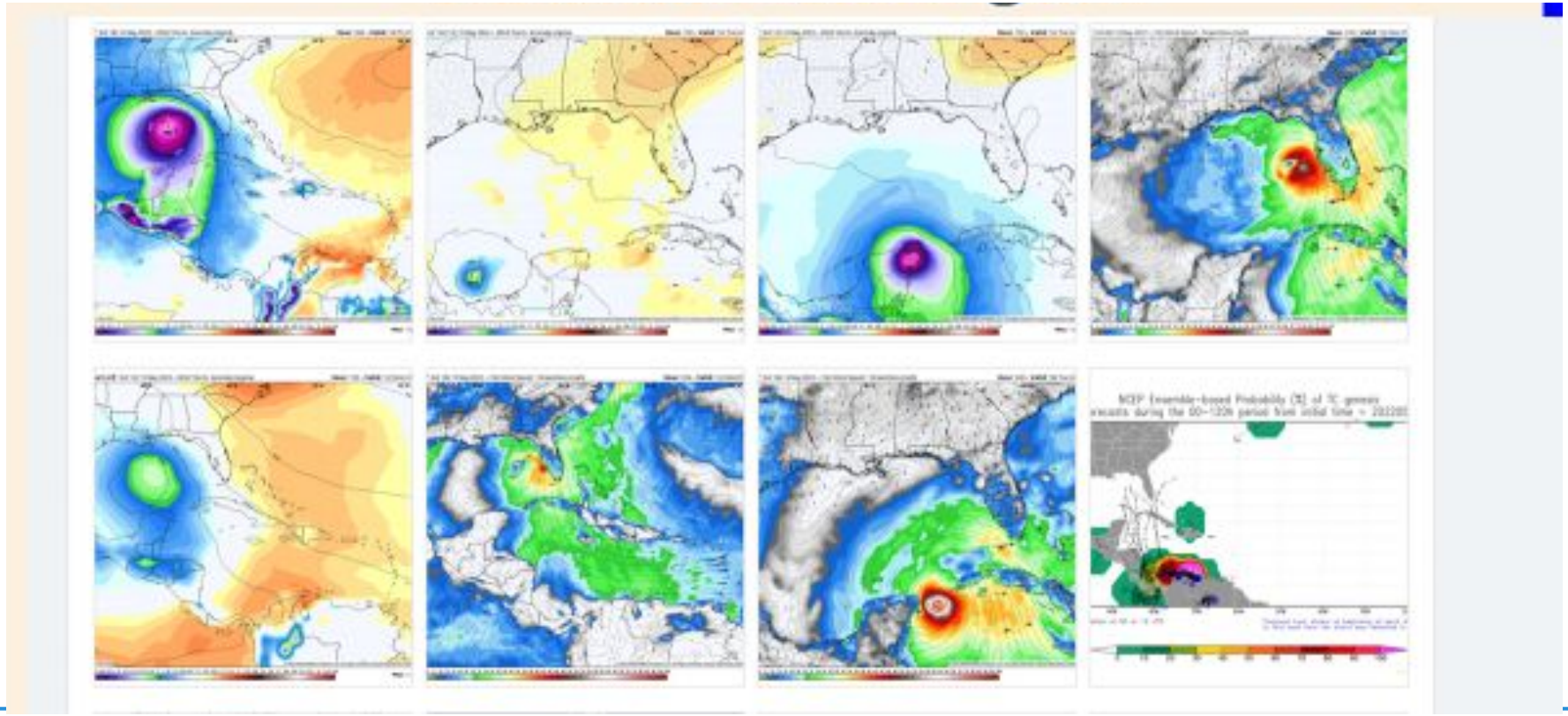
SOCIAL MEDIA

“SOCIAL MEDIAROLOGISTS”

- Just because a forecast goes “viral” doesn’t mean it’s likely to happen.
- Individual models constantly create tropical systems.
- There is a 175 mile track error out 5 days. Imagine what that is at 10 days?!
- **We will NEVER hide a hurricane from you!**
- **NEVER follow someone who is showing just weather models.**

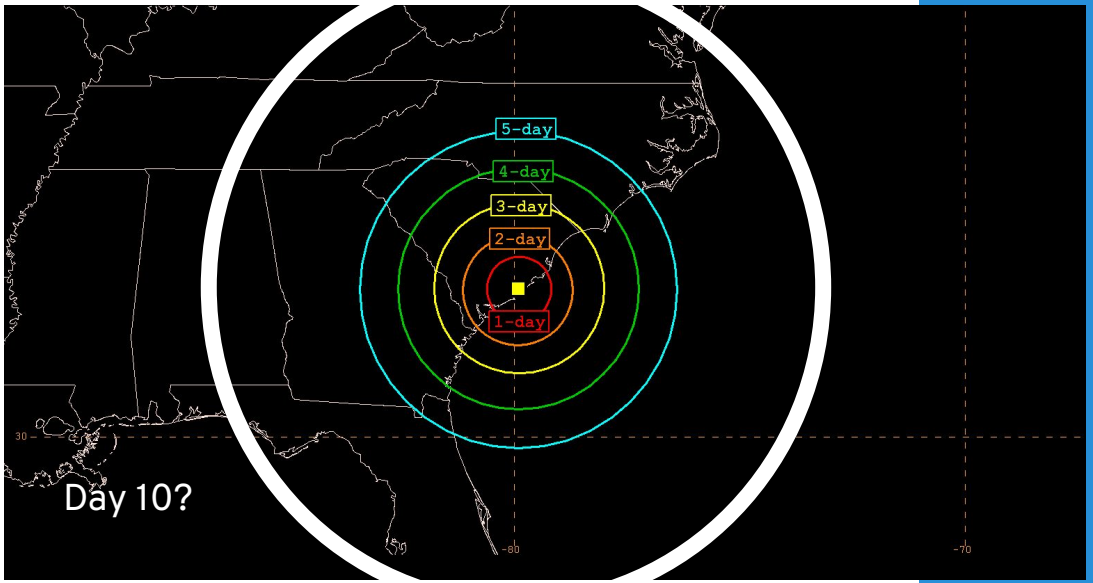


WHAT HURRICANE DO YOU THINK THESE IMAGES WERE FROM?



THERE WAS NO STORM!

How good are the forecasts?



This is a good visual representation on how large that error is at Day 5. Imagine how large it is when you see a weather model showing it at day 10?

WHAT WILL WE SAY EVERY TIME YOU CALL US AND ASK "WHAT ABOUT THAT STORM THE MODELS ARE SHOWING THAT SOCIAL MEDIA IS TALKING OUT ABOUT THAT'S MORE THAN 7 DAYS OUT?"

(YOU CAN COPY AND PASTE THIS FROM OUR FIRST EMAIL OF THE SEASON AND REUSE IT EVERY TIME!)

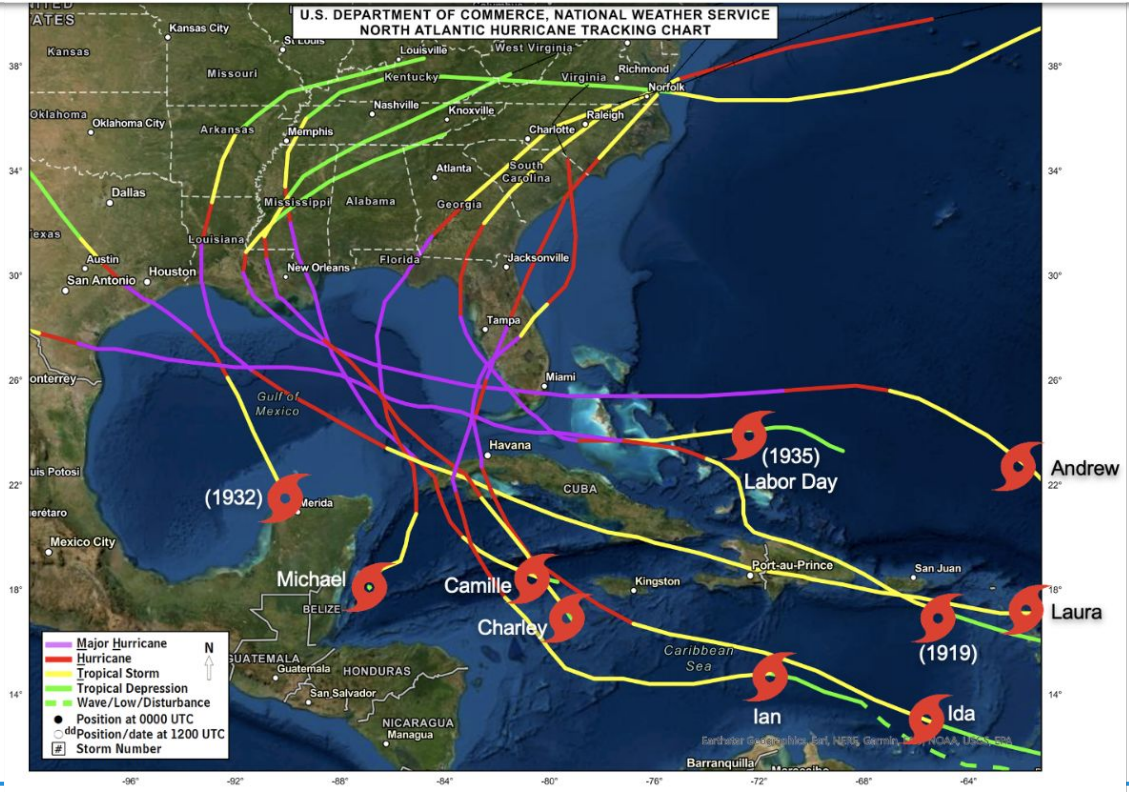
It is far too soon to discuss any potential impacts due to the high level of uncertainty in where/when it might develop and where it might move, IF it develops at all. We do not issue forecasts more than 7 days out. Please follow official sources of weather information. Please know that our office WILL send out email updates if/when there is a reasonable threat of tropical activity in the Gulf.

Challenge: Short Lead Times

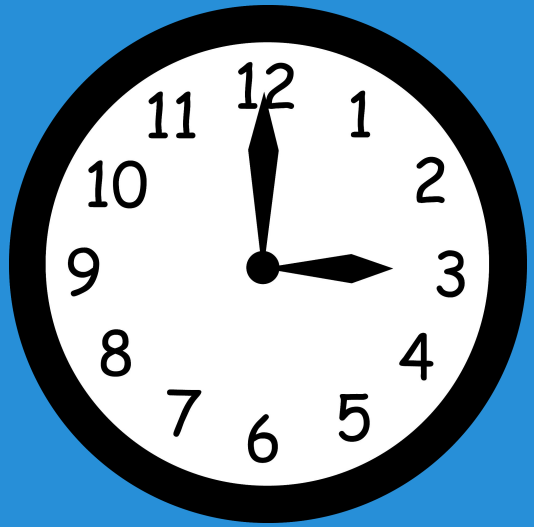
The Nation's Strongest – 150 MPH or Greater
All But 1 Were Tropical Storms 3 Days Before Landfall

U.S. 150 mph+

1919 – Storm 2
1932 – Storm 2
1935 – Labor Day
1969 – Camille
1992 – Andrew
2004 – Charley
2018 – Michael
2020 – Laura
2021 – Ida
2022 – Ian



Average time to become a hurricane is 50 h before landfall



General Timeline: When do products become available?

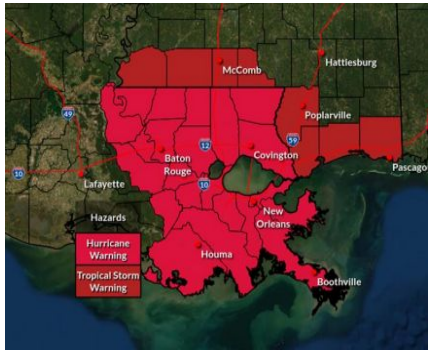
NEW

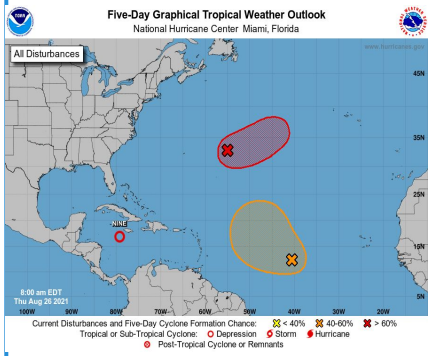
7 DAYS OUT

- TROPICAL WEATHER OUTLOOK

60 HOURS OUT*

- PSURGE (FOR SELECT, WELL-BEHAVED STORMS)





5 DAYS OUT

- NHC ADVISORY PACKAGES (CONE, WIND SPEED PROBABILITIES, TOA)
- SLOSH MOMS AND MEOWS*

48 HOURS OUT

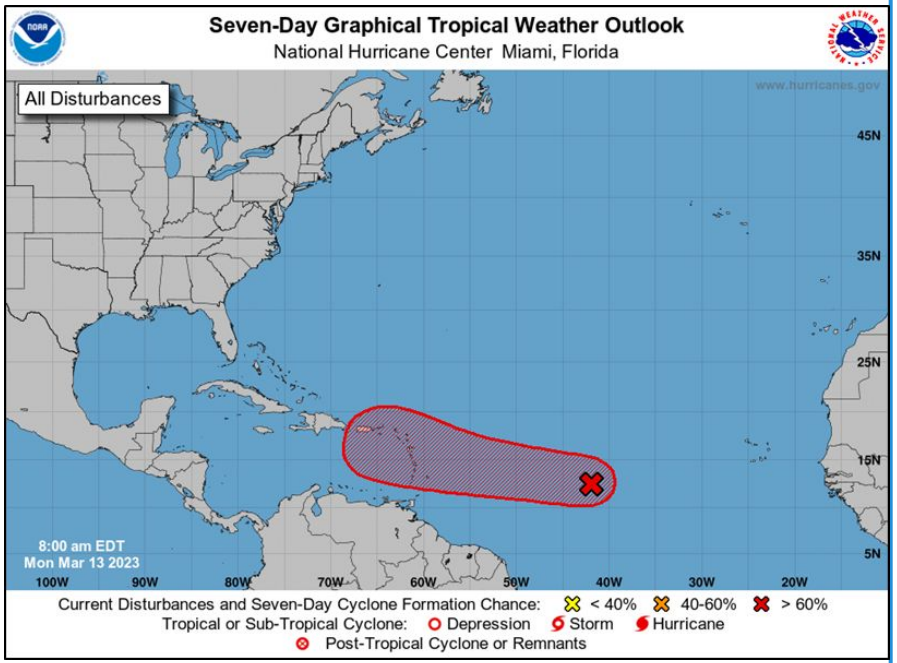
- WATCH/WARNING PRODUCTS
- HURRICANE THREATS AND IMPACTS GRAPHICS
- PSURGE/INUNDATION FORECASTS

7 DAY GRAPHICAL TROPICAL WEATHER OUTLOOK (TWO)

- Systems will likely be introduced sooner
- They will like move “into” the medium and high categories earlier, producing longer lead times
- The “blobs” will be larger, especially for systems with a fast forward speed

Yes, there could be “more” blobs that “linger” longer.

The cone graphic and forecast stays at 5 days once a system forms.



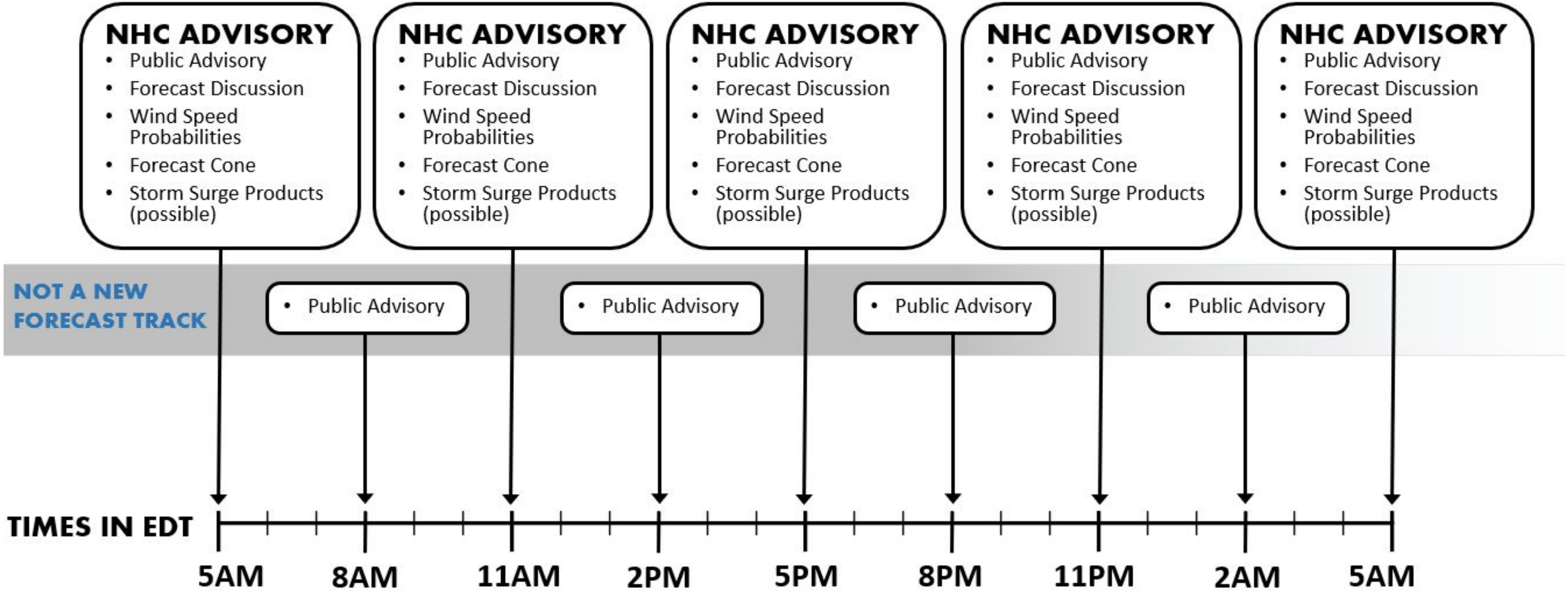
REVIEW: THE NHC ADVISORY CYCLE

- **When no watches/warnings in effect anywhere:**
  - Full advisory packages issued at 4a, 10a, 4p, 10p CDT

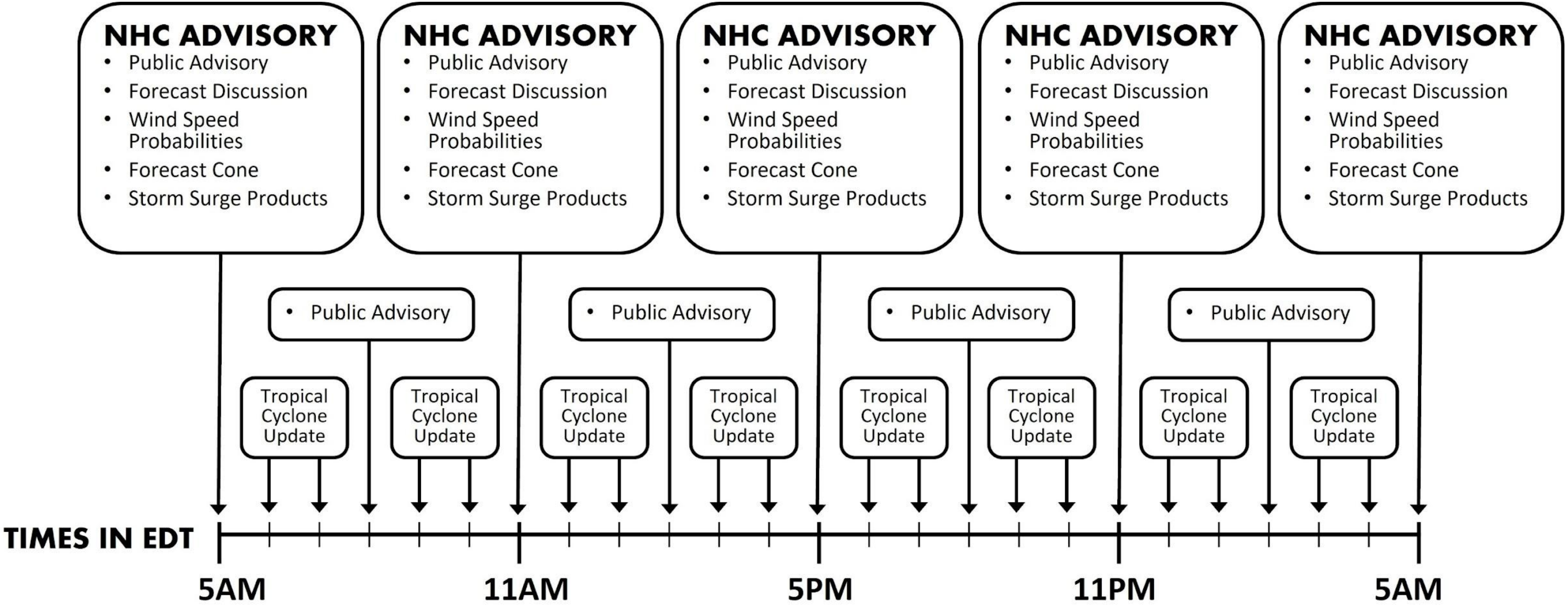
- **When watches/warnings are in effect somewhere:**
  - Full advisory packages issued at 4a, 10a, 4p, 10p CDT
  - Intermediate advisories issued at 1a, 7a, 1p, 7p CDT

- **When a storm with a well defined eye is within radar range:**
  - Full advisory packages issued at 4a, 10a, 4p, 10p CDT
  - Intermediate advisories issued at 1a, 7a, 1p, 7p CDT

NHC ADVISORY CYCLE WITH WATCHES/WARNINGS

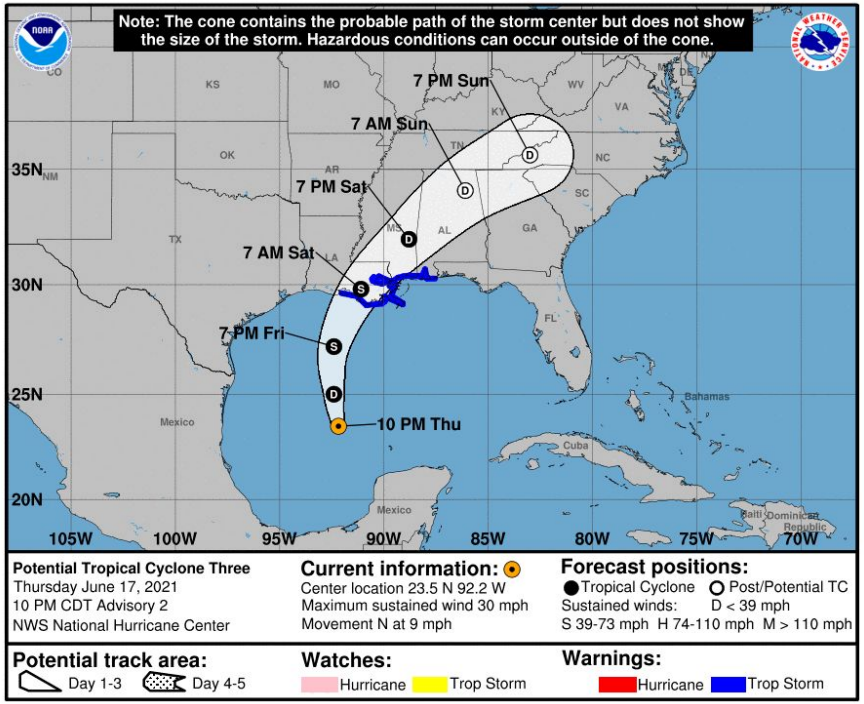


NHC ADVISORY CYCLE WITH STORM NEAR LANDFALL



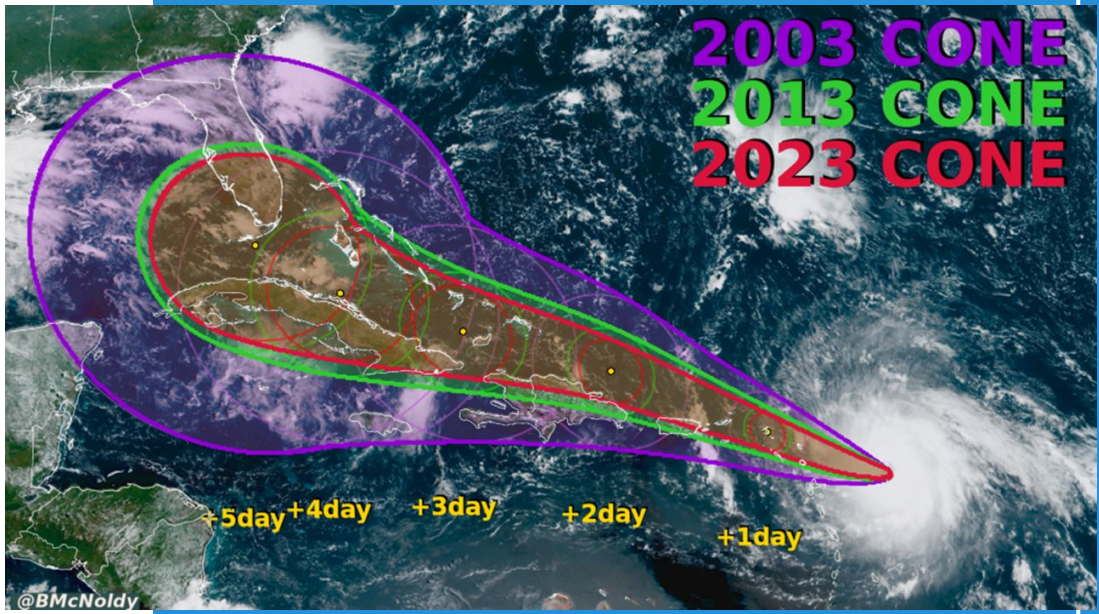
WHAT INFORMATION CAN YOU FIND IN THIS GRAPHIC?

- How strong the winds will be
- Which hurricane hazard will be the most impactful
- Where the center of the storm is most likely to move
- What areas will feel the greatest impacts from the storm
- What time the highest impacts will be felt

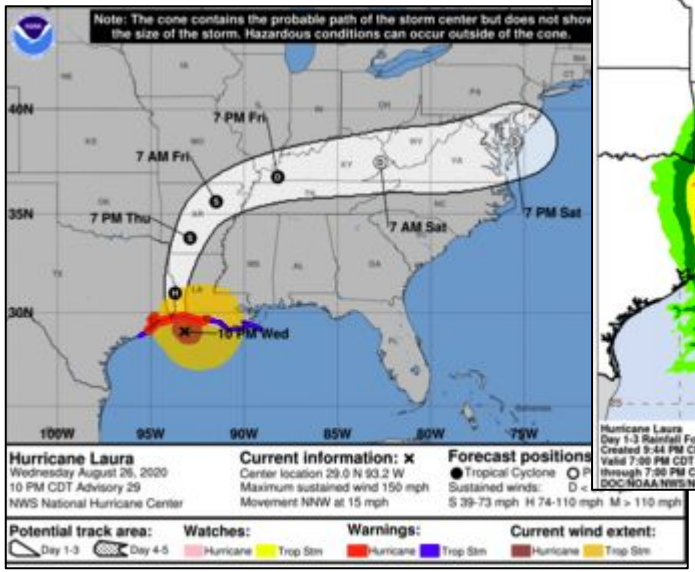


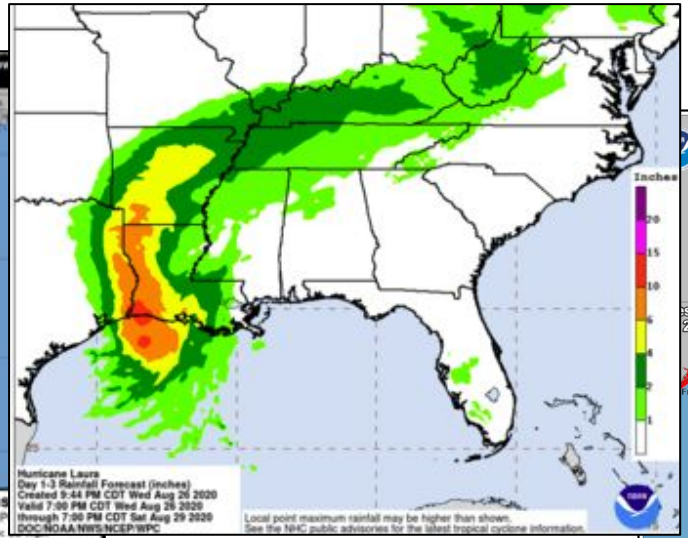
WHAT THE CONE ACTUALLY IS

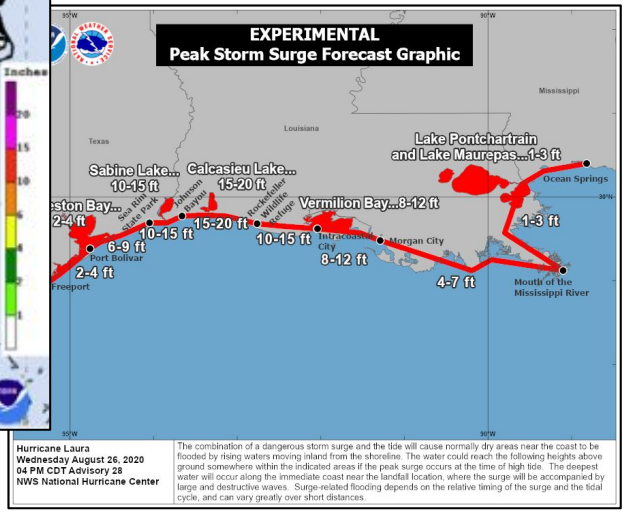
- Represents the most likely path of the CENTER of the storm- NO forecast of impacts.
- Created by connecting imaginary circles that represent 2/3 the average track error over the past 5 years.
- Small changes in size every year
- **Does NOT change for every storm.**



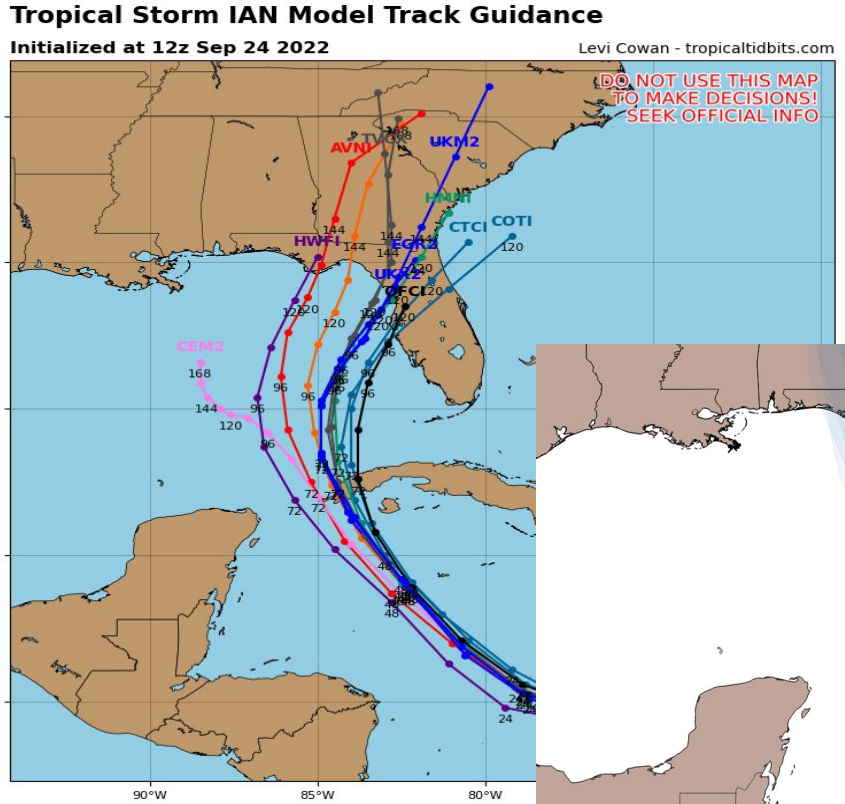
REMINDER: THE CONE DOESN'T TELL YOU ABOUT IMPACTS!

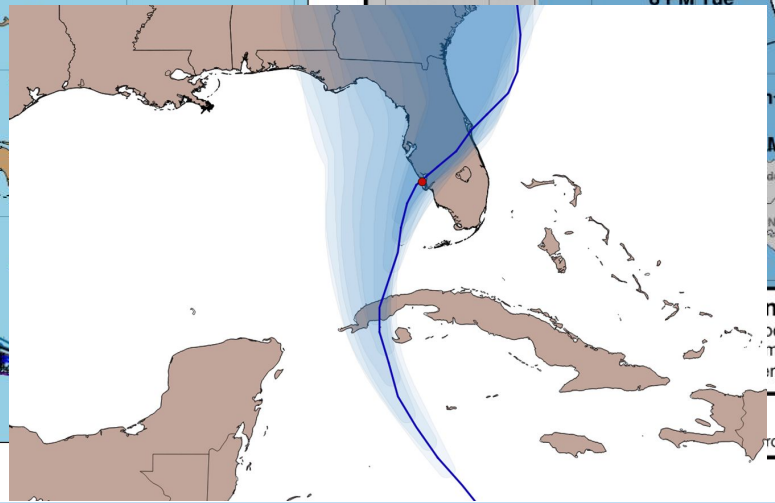


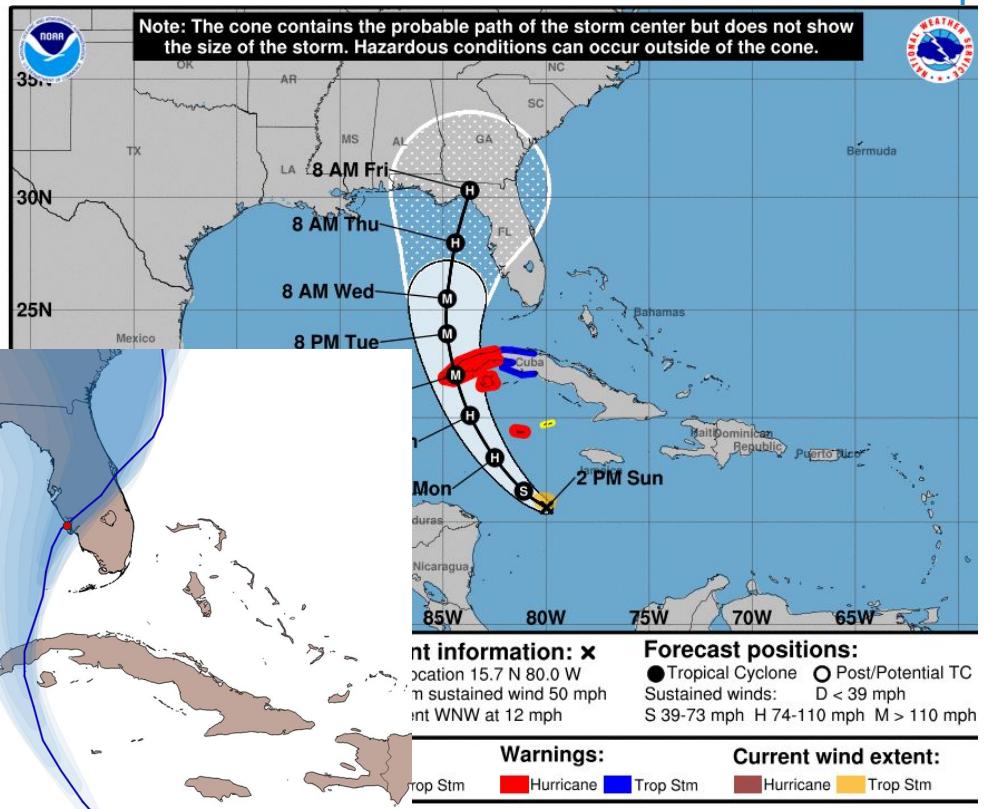




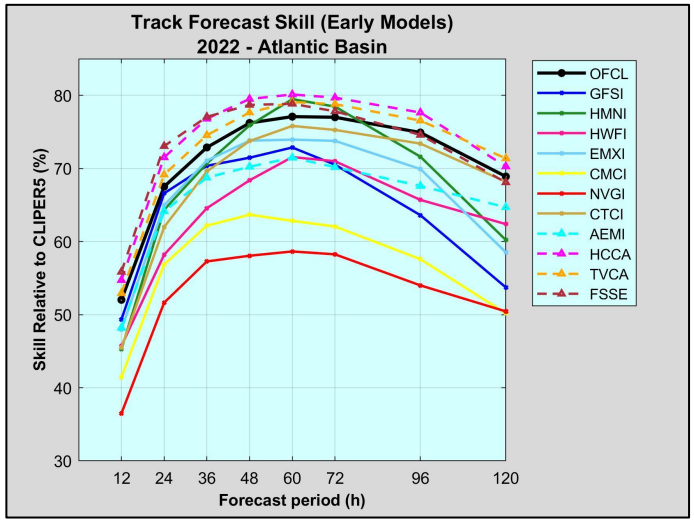
IAN EXAMPLE


Tropical Storm IAN Model Track Guidance
Initialized at 12z Sep 24 2022
Levi Cowan - tropicaltidbits.com
DO NOT USE THIS MAP
TO MAKE DECISIONS!
SEEK OFFICIAL INFO
AVNI
UKM2
HMON
CTCI
COTI
HWFI
EGR2
UKX2
CEM2
35°N
30°N
25°N
20°N
15°N
90°W
85°W
80°W




Note: The cone contains the probable path of the storm center but does not show the size of the storm. Hazardous conditions can occur outside of the cone.
8 AM Fri
8 AM Thu
8 AM Wed
8 PM Tue
2 PM Sun
Mon
30N
25N
Bermuda
Bahamas
Cuba
Haiti
Dominican Republic
Puerto Rico
Mexico
Nicaragua
85W
80W
75W
70W
65W
Forecast positions:
Tropical Cyclone
Post/Potential TC
Sustained winds:
D < 39 mph
S 39-73 mph H 74-110 mph M > 110 mph
Warnings:
Hurricane
Trop Stm
Current wind extent:
Hurricane
Trop Stm

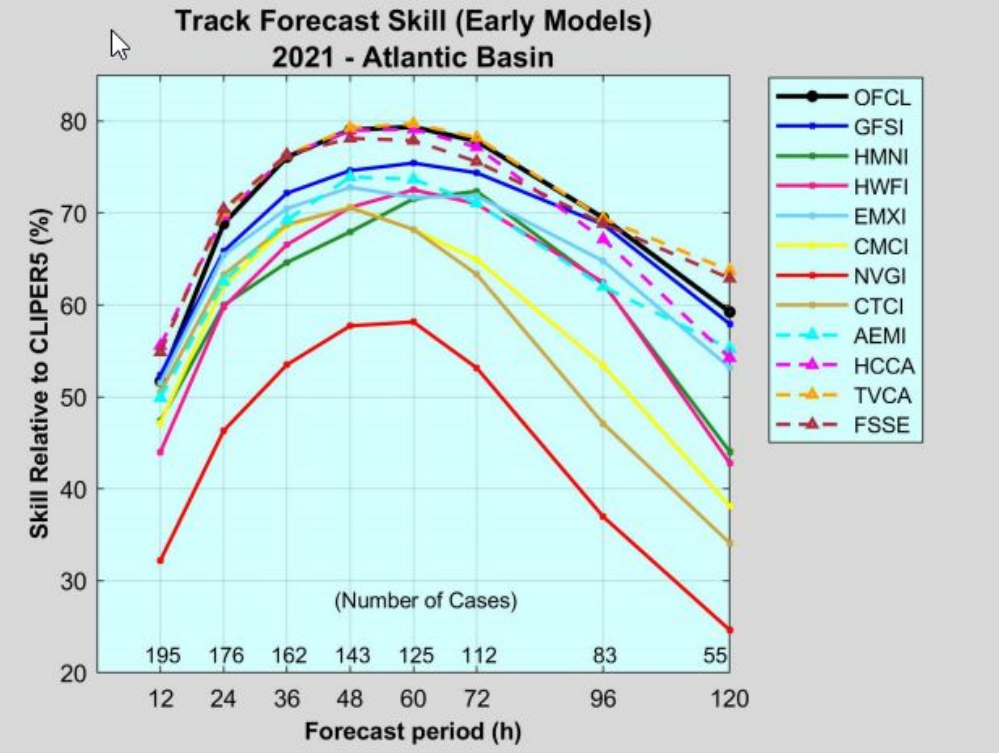
How good are the forecasts?



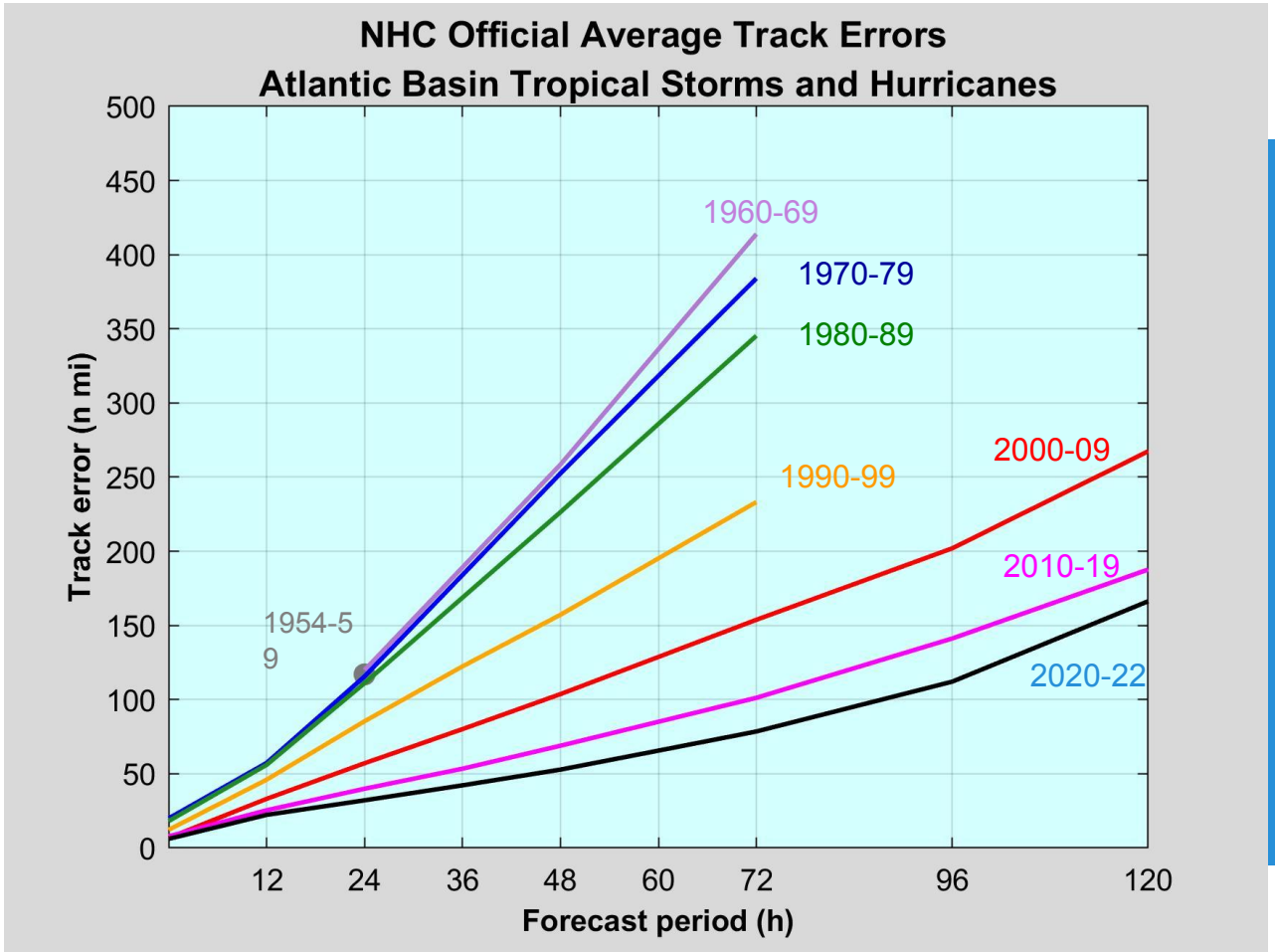
In 2022,

WHAT WEATHER MODEL SHOULD YOU USE FOR YOUR HURRICANE FORECASTING?

1. The GFS (American model)
2. The Euro (European model)
3. The ICON (German model)
4. The UKMET (UK model)
5. The HWRF (Hurricane model)
6. I like Spaghetti
7. You shouldn’t.

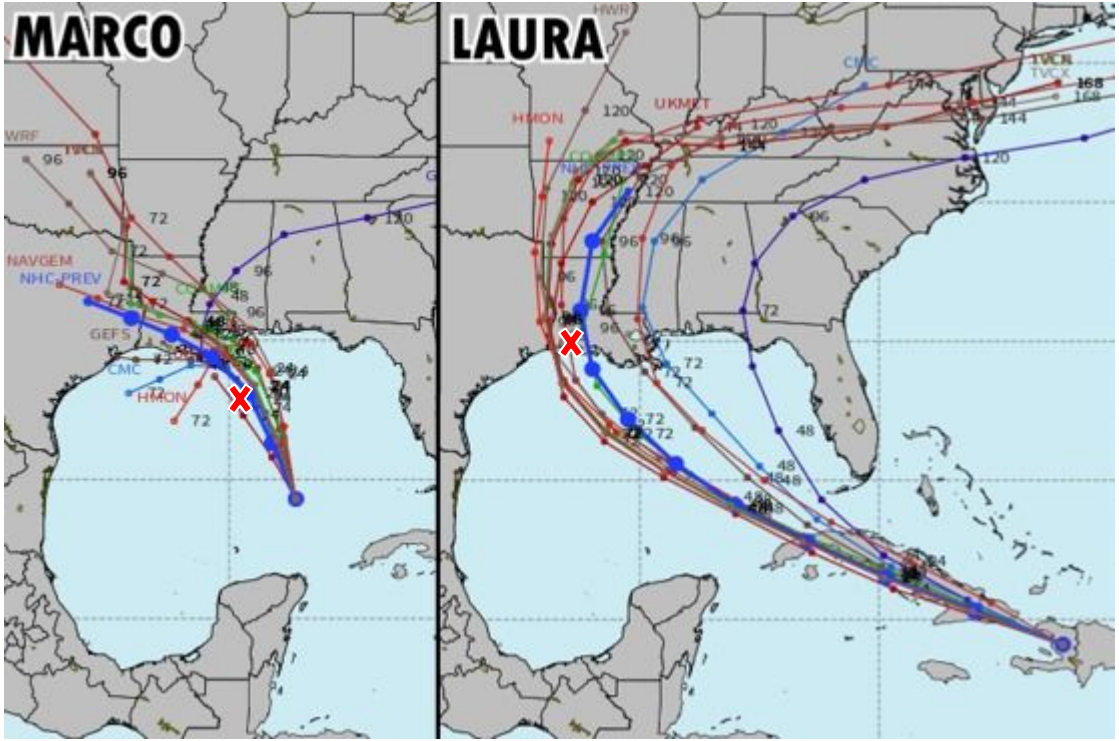


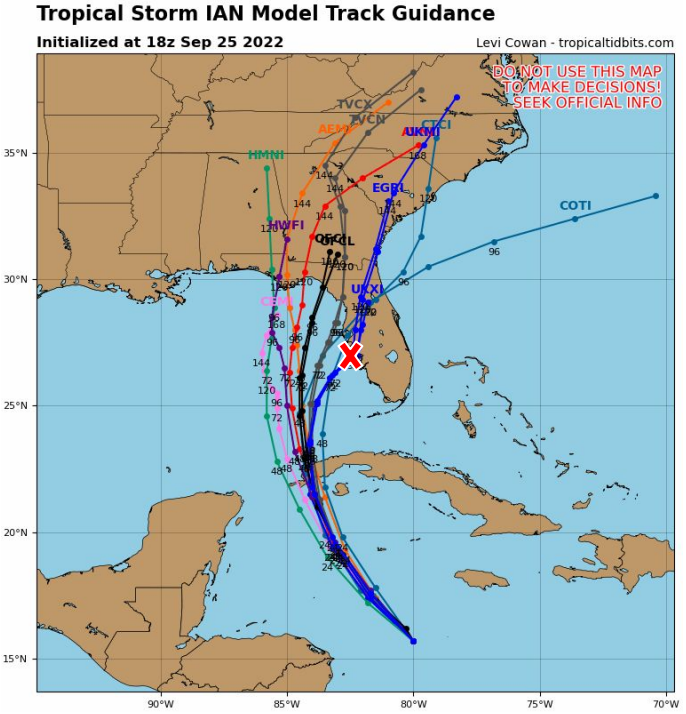
- In 2021, no individual model performed better than the official NHC track forecasts.
- A few consensus aids (dashed lines) did slightly outperform NHC at early lead times.



Track forecasts continue to get better but note there is a 150 mile error still at Day 5!

SPAGHETTI MODELS- PICK YOUR FAVORITE LINE



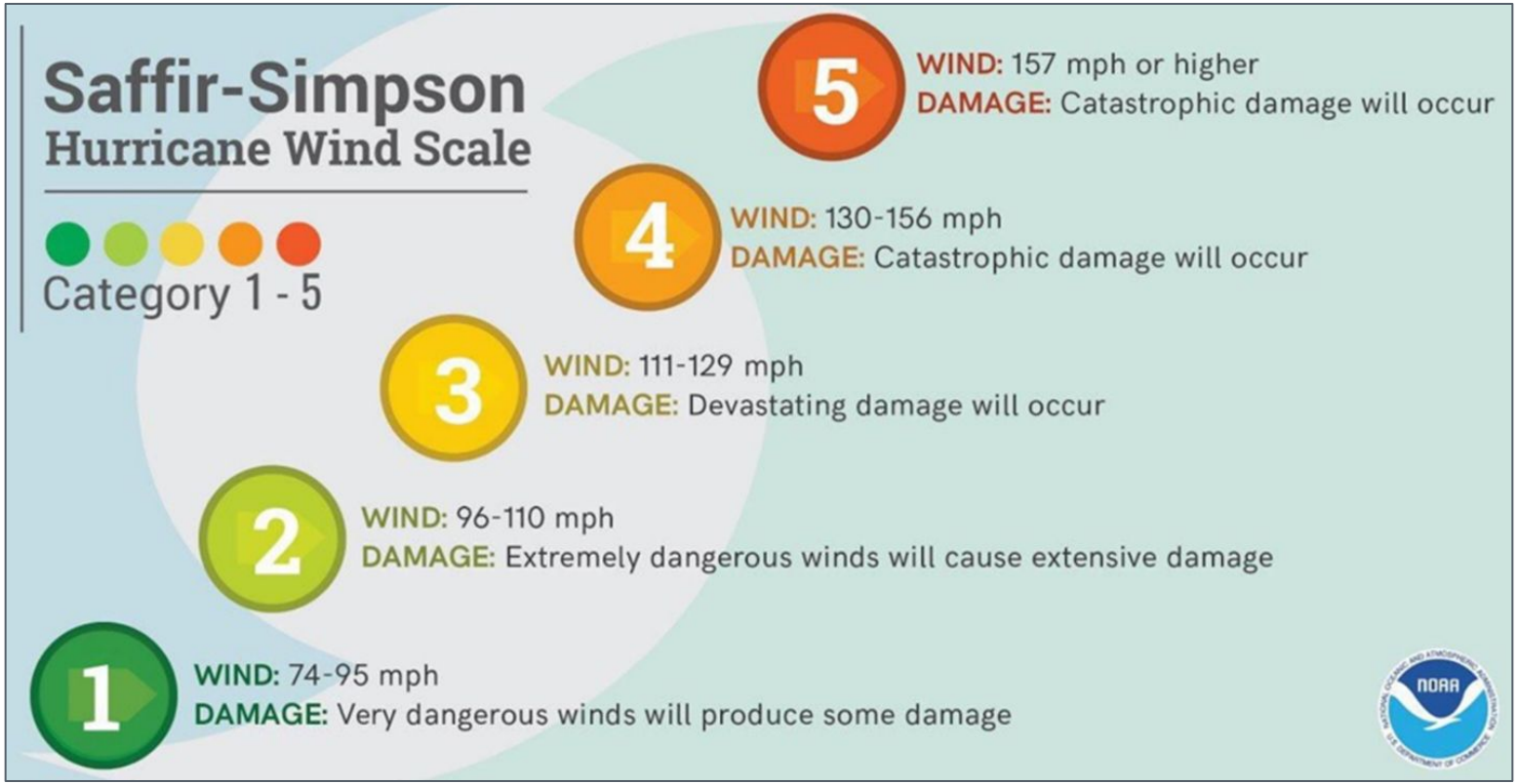


WIND HAZARDS AND COMMUNICATION

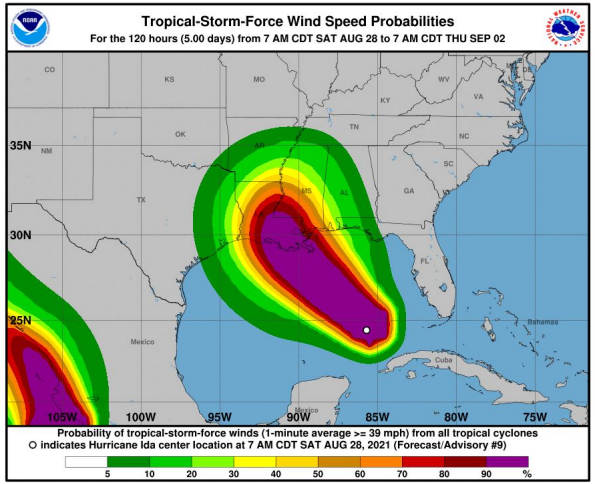
WHAT ACTIONS WOULD YOU TAKE IF A CATEGORY 1 STORM WAS MAKING LANDFALL WITH 20 INCHES OF RAIN AND 18 FEET OF SURGE?

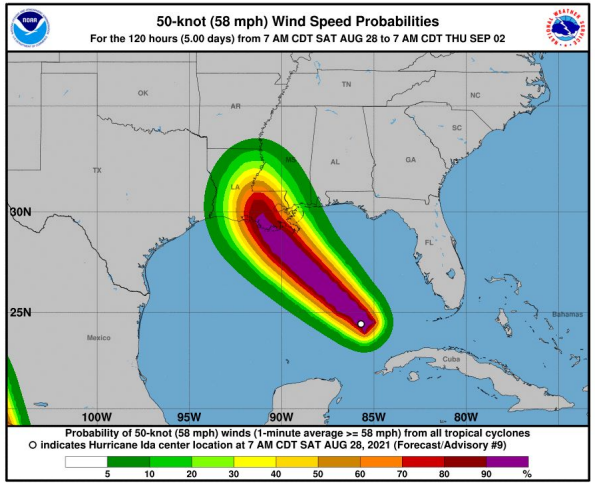
WHAT HAZARD CAUSES THE MOST LOSS OF LIFE?

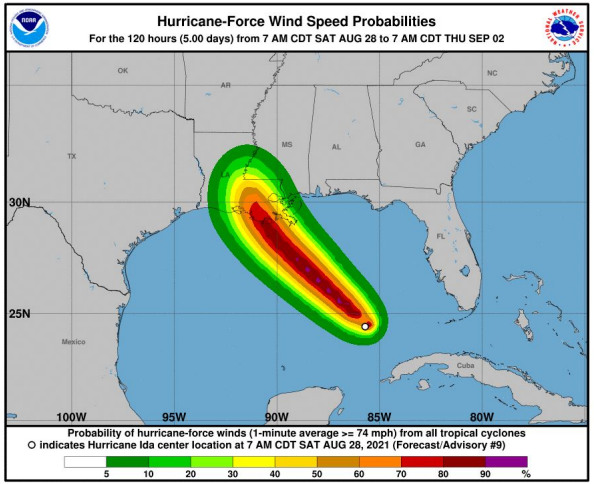
THE SAFFIR-SIMPSON WIND SCALE



WIND SPEED PROBABILITIES







- Available for 34kt, 50kt, 64kt wind speeds out 5 days
- Remember, low probabilities can be significant!

HOW ARE THEY MADE?

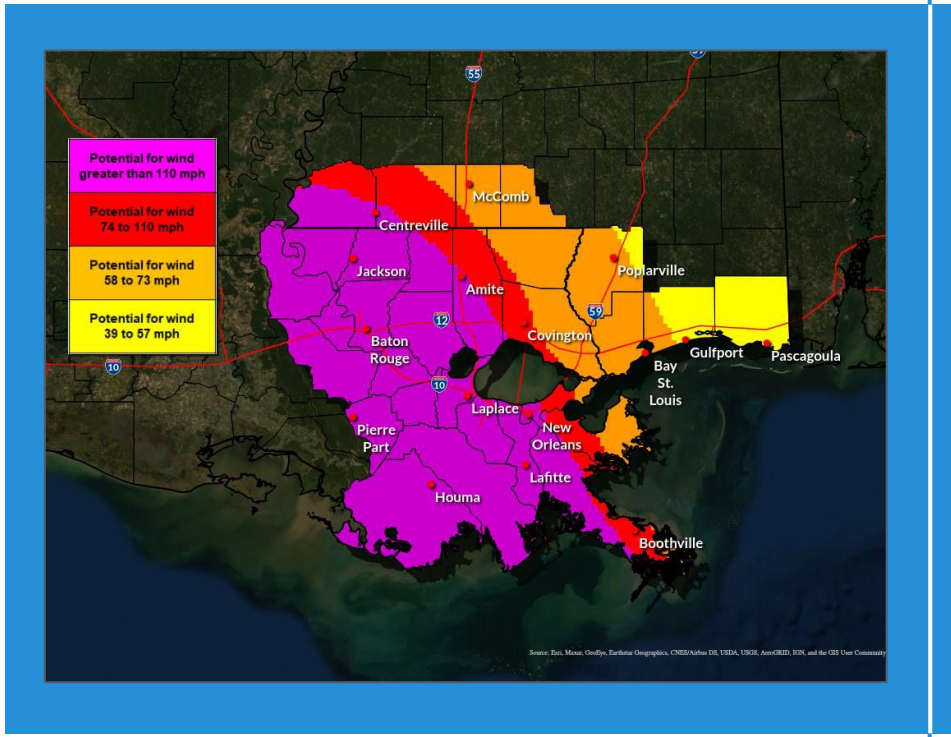
Based on 1,000 realistic alternative scenarios created using:

- Official NHC track and intensity forecast
- Historical NHC track and intensity forecast errors
- Climatology and persistence wind radii model

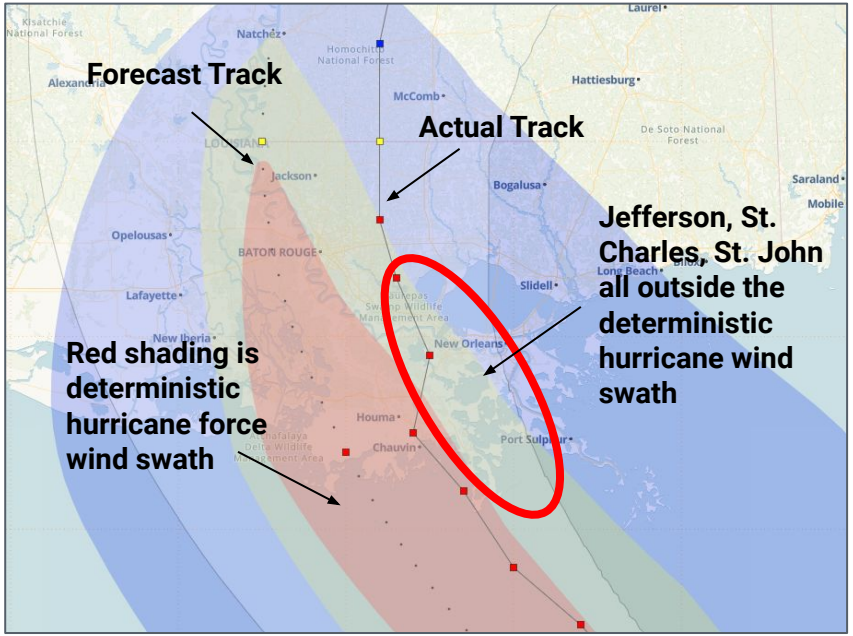
Uses model spread to account for track uncertainty.

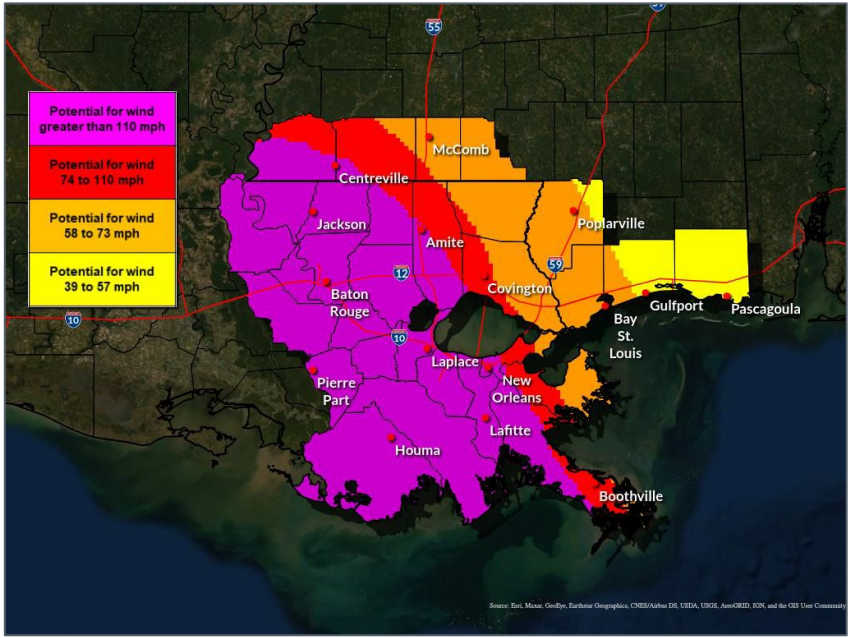
HURRICANE THREATS AND IMPACTS GRAPHICS (HTI)

- Probabilistic forecast based on the current NHC advisory and accounting for reasonable forecast errors
- Wind, Tornado, Surge, Flooding
- Provides the POTENTIAL of what you should prepare for- likely will **be higher** than what is in the forecast
- Example from Hurricane Ida 10am 8/28.



WHY USE HTI'S?

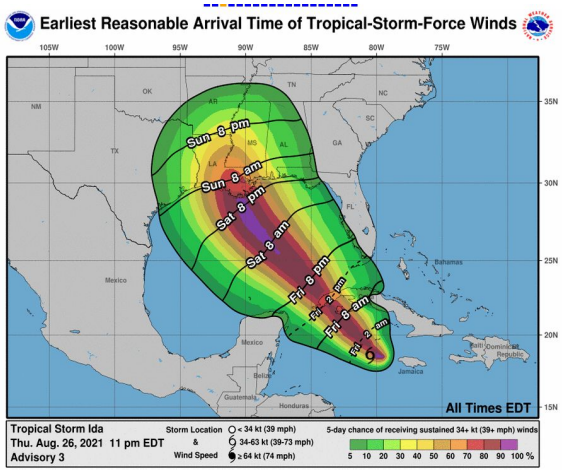


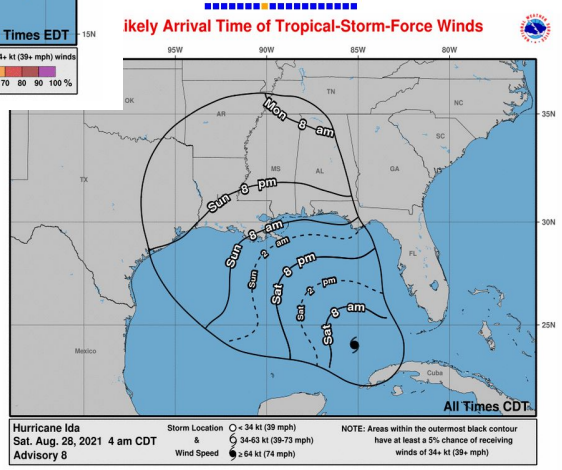


All graphics associated with the 10am CDT forecast 8/28 for Hurricane Ida

TIME OF ARRIVAL GRAPHICS

- Provides probabilistic time of arrival of 34 KT/39 MPH winds
- Earliest reasonable is based on 10% threshold- 90% chance that the storm will arrive AFTER the time on the graphic.
- Most likely is based on 50% threshold.

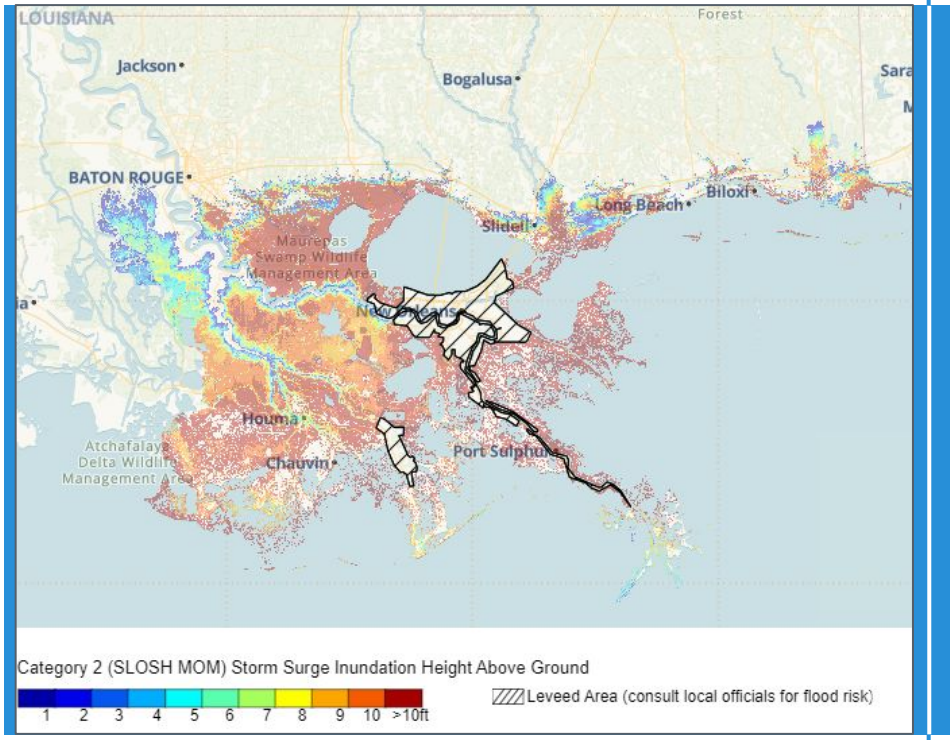




STORM SURGE

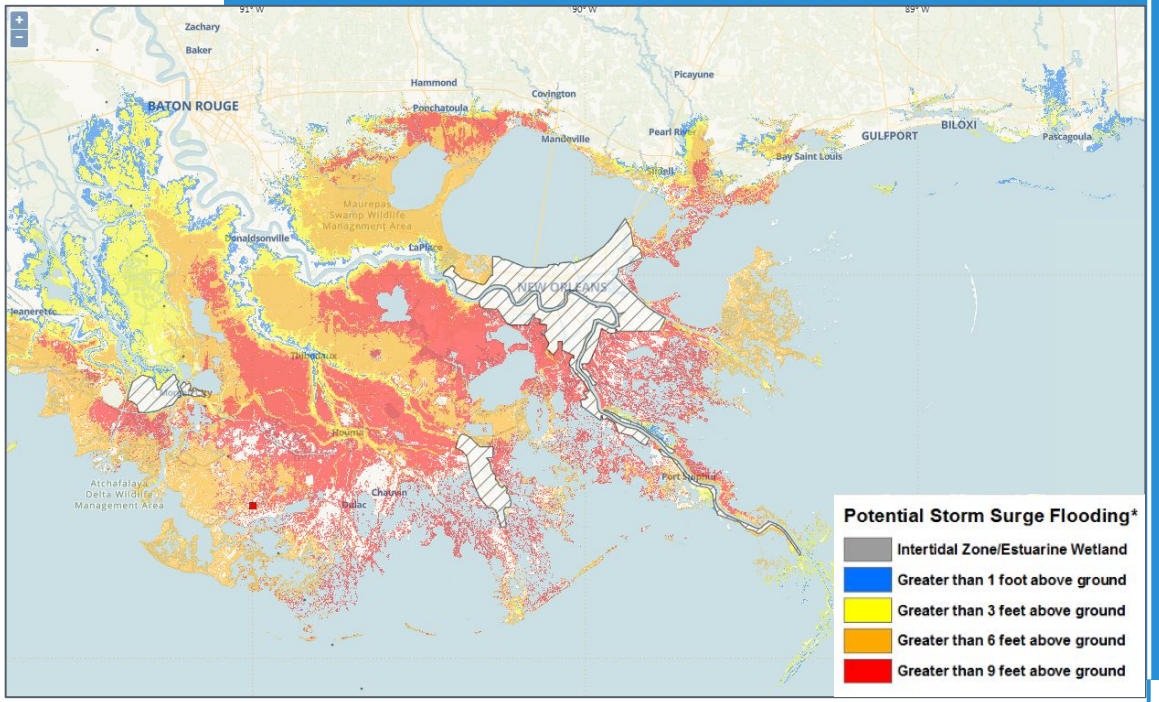
SLOSH MOMS AND MEOWS

- MOMs (maximum of maximums) vary category only and are primarily used during the off season for planning purposes
- MEOWs (maximum envelope of water) vary direction, forward speed, and category and can be used in the 3-5 day time frame when there is still significant uncertainty about the exact track/intensity of a storm
- Available through HVX using the storm surge explorer



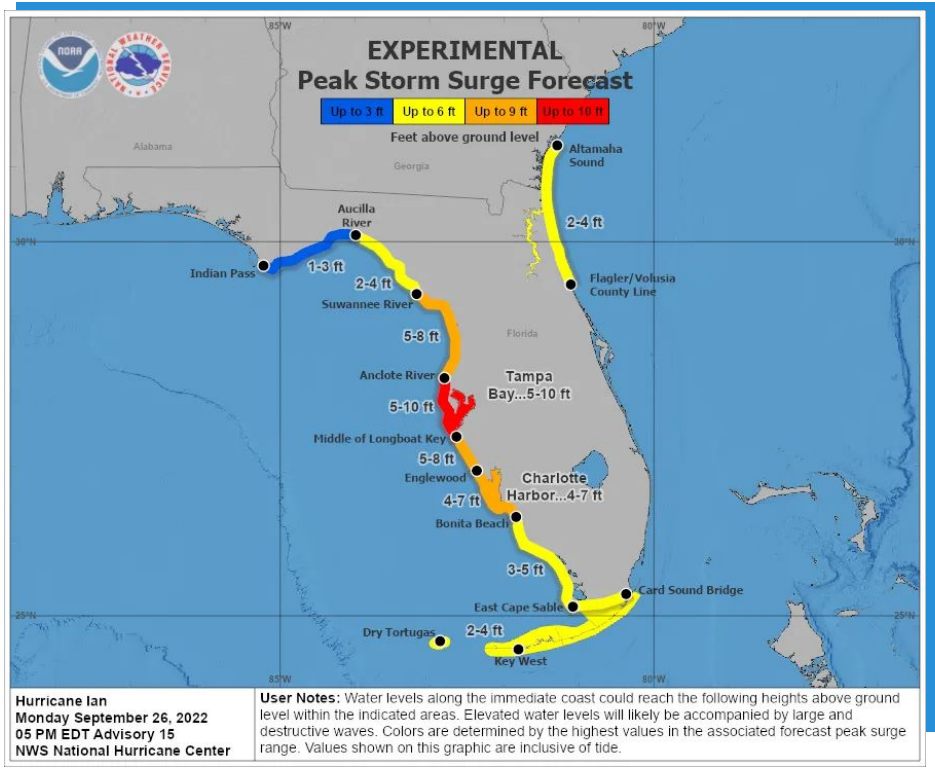
STORM SURGE FLOODING MAP

- Based on probabilistic surge forecasts
- Provides a reasonable worst case inundation at each location based on the current NHC forecast track and intensity.
- Shows how high above ground the water is forecast to go, in 3 feet intervals.



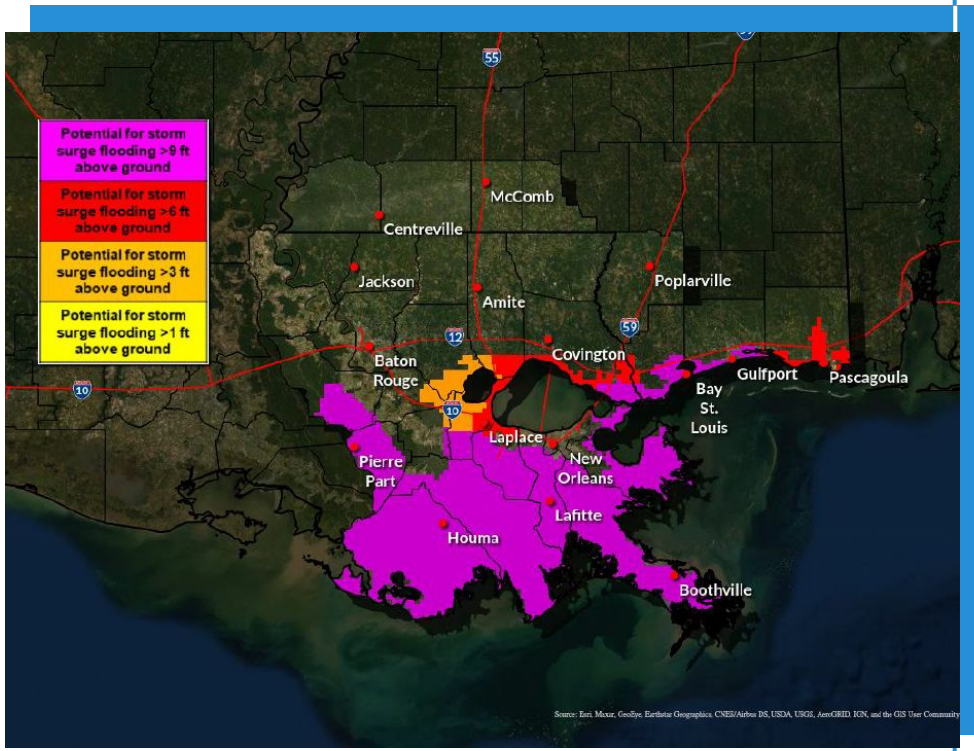
PEAK STORM SURGE FORECAST GRAPHIC

- Provides potential peak inundation values along the open coast
- Not everywhere will see these values
- Does NOT indicate potential depths away from the open coast
- Available around advisory time when watches/warnings are in effect.



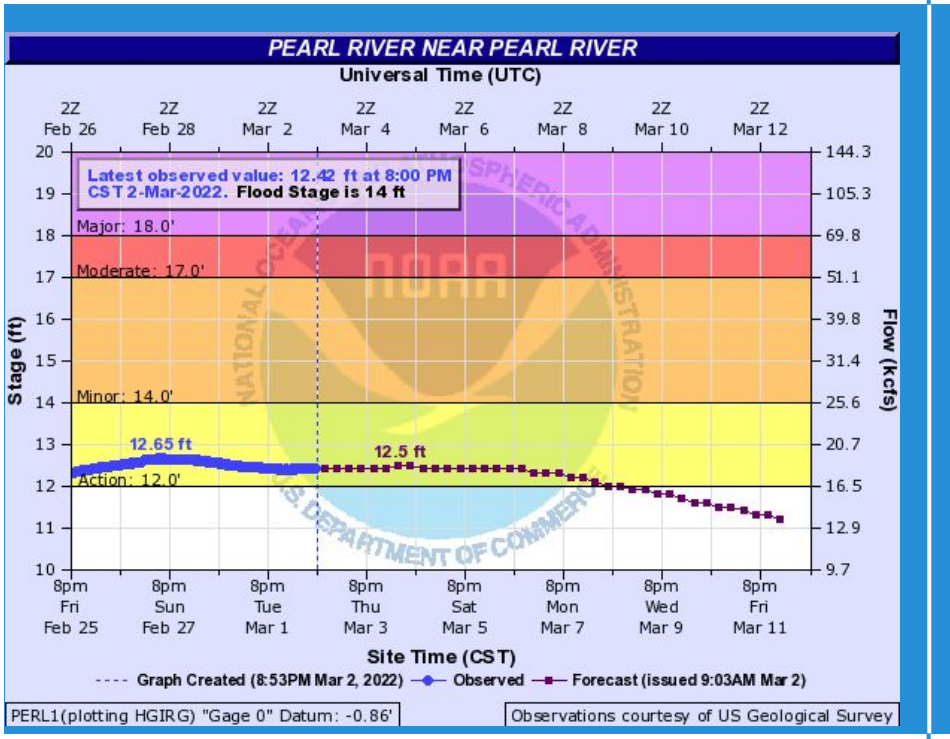
STORM SURGE HTI

- HTI graphics are also created for the storm surge threat
- Because of how they are created, they do not show varying depths away from the coast effectively
- Mostly representative of possible peak values along the open coast



RIVER FORECASTS

- Forecasts are deterministic. They do not account for errors in the forecast rain amounts or locations.
- Typically only include 24 hours of rainfall, but we can coordinate with them to request a longer duration
- In some cases, the LMRFC can produce “contingency forecasts” with extra rainfall
- For sites with a tidal influence, the LMRFC does incorporate storm surge into their river forecasts as well
- Forecasts available on our website: https://water.weather.gov/ahps2/index.php?wfo=LIX



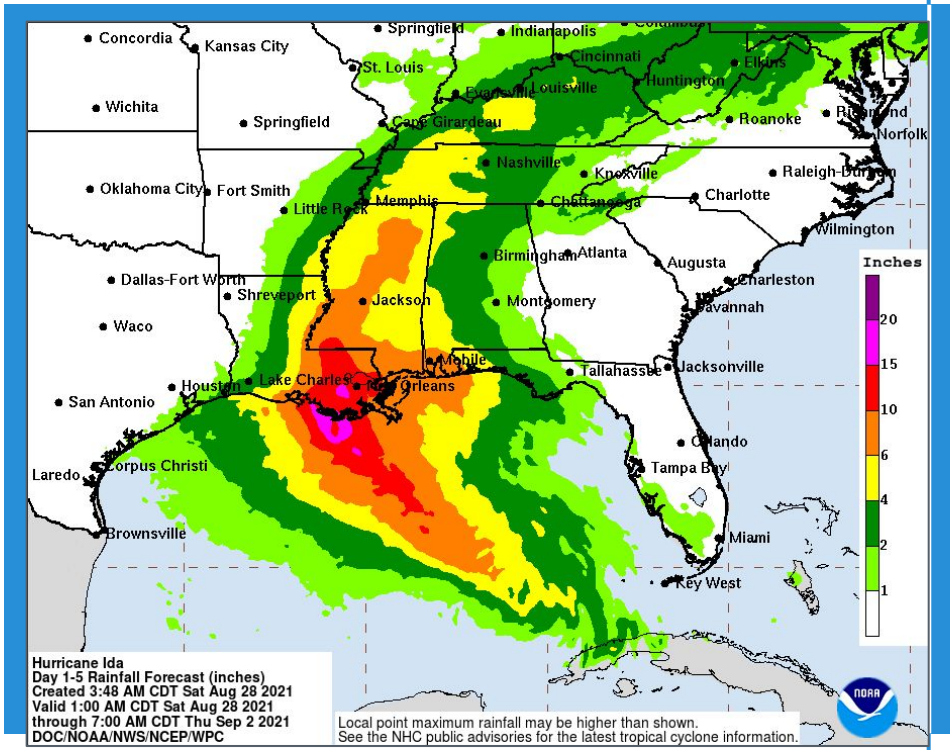
NOFD

FLOODING

RAIN

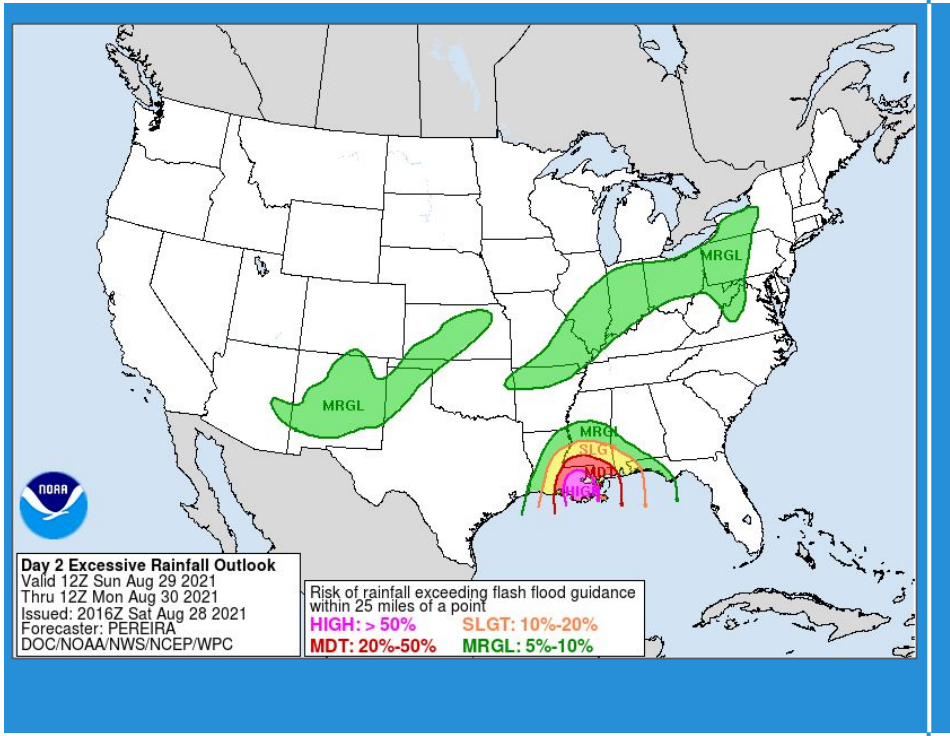
DETERMINISTIC RAINFALL FORECAST (QPF)

- Rainfall forecast graphics for tropical systems are created with a broader color scale .
- They are hosted on both the WPC and NHC website and typically include 3 to 5 days of rainfall depending on the storm.



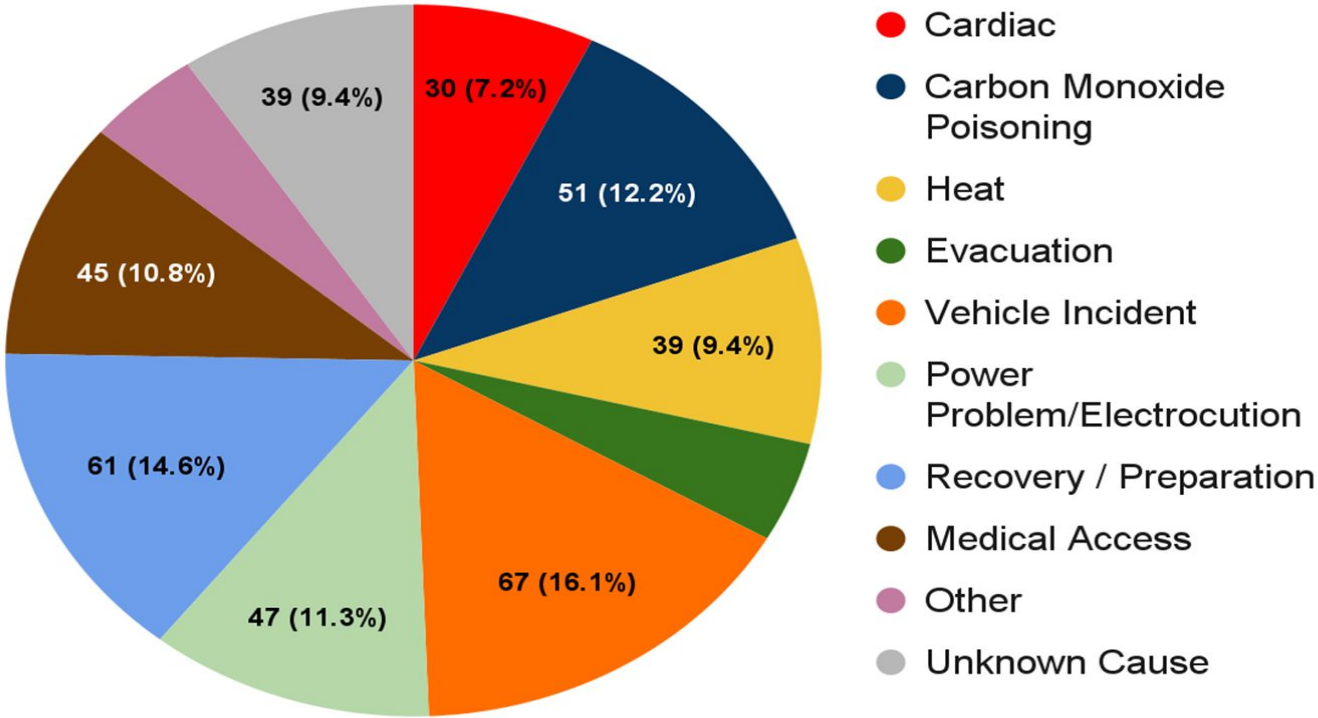
EXCESSIVE RAINFALL OUTLOOKS (ERO)

- Describes flash flood threat
- Probabilistic product accounting for forecast rainfall, uncertainty and antecedent conditions
- High Risk context:
  - 54% result in at least 1 fatality
  - 73% result in at least $1M damage



OTHER IMPORTANT TOPICS

INDIRECT FATALITIES 2013-2023



WATCH/WARNINGS DURING TROPICAL

- Storm Surge Watch/Warning**
- Hurricane Watch/Warning**
- Tropical Storm Watch/Warning
- Flood Watch and Flash Flood Warnings**
- Tornado Watches and Tornado Warnings**
- Extreme Wind Warnings**

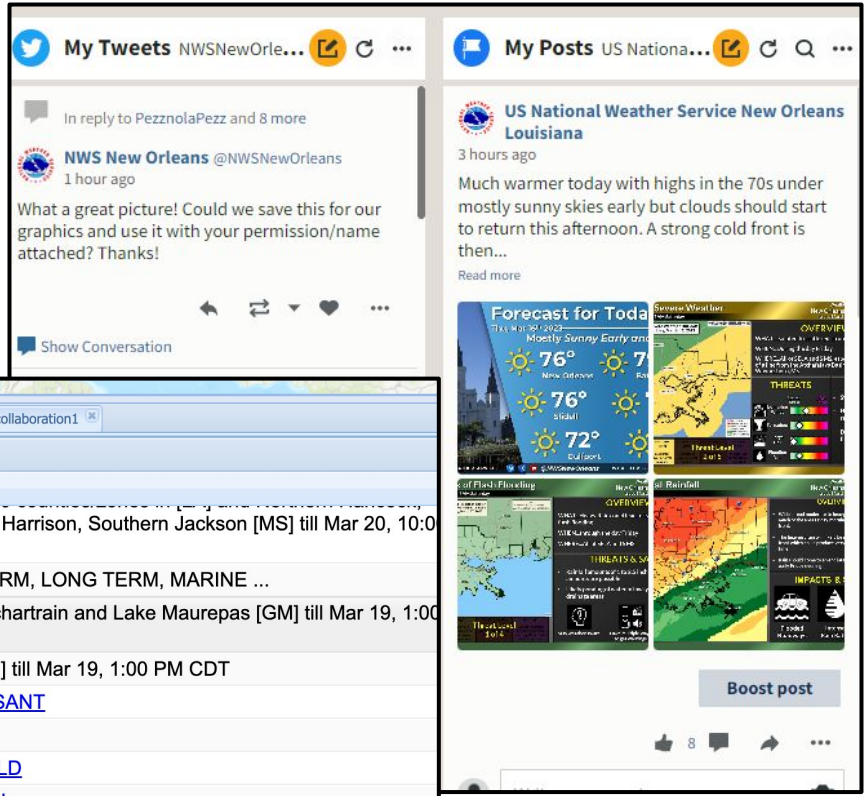
***These warnings will be alerted via Wireless Emergency Alerts that automatically get pushed to cell phones.

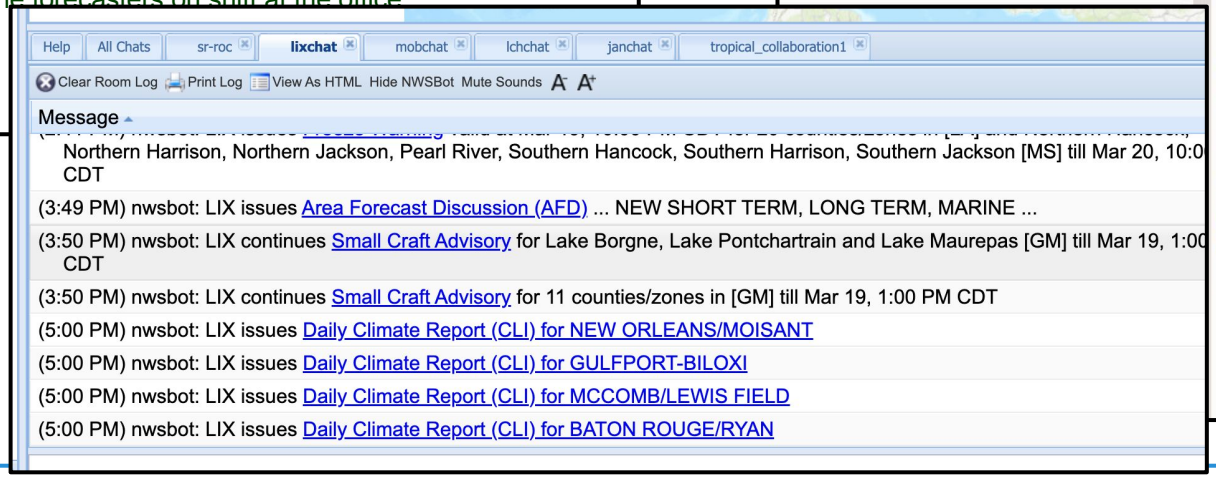
Watches are issued 48 hours out and warnings 24 hours.

PARTNER SUPPORT

Next Update and Contact Information:

The next update will be sent with the **2pm weekly briefing**. If you have any questions in the interim or need additional information, please do not hesitate to contact us. We can be reached by phone at 504-522-7330 or 985-649-0429. Use extension 4 to speak with a forecaster. Alternatively, you can reach us by email by replying to this message or sending an email to sr-lix.forecasters@noaa.gov. Both methods will be delivered to the forecasters on shift at the office.





National Weather Service

New Orleans/Baton Rouge

SEVERE WEATHER BRIEFING

2:00 PM CST
Tuesday, December 13, 2022

Prepared by:
ew Orleans/Baton

This is a reminder that **"NWS New Orleans Weekly Webinar"** will begin in 1 Hour on:

Thu, Mar 2, 2023 2:00 PM - 3:00 PM CST

Add to Calendar: Outlook® Calendar | Google Calendar™ | iCal®

Please send your questions, comments and feedback to: sr-lix.forecasters@noaa.gov

How to Join the Webinar

1. Click the link to join the webinar at the specified time and date:

Join Webinar

Note: This link should not be shared with others; it is unique to you.

Southeast Louisiana and Southern Mississippi partners,

Here is an update concerning an upcoming severe weather threat Tuesday night into Wednesday night.

Changes Since Last Update:

- Slight expansion of Enhanced Risk for Tuesday into early Wednesday morning.
- Slightly higher confidence in regards to greater rainfall/flash flooding potential for central and western a
- Slight risk of Excessive Rainfall Wednesday morning through Wednesday night

Overview:

A strong system is expected to move through the deep south early to mid week bringing the potential for severe

WHAT: Slight to Enhanced Risk of Severe Weather and Slight Risk of Excessive Rainfall.

WHEN: Tuesday night through Wednesday night.

WHERE: All of SE LA and southern MS.

CONFIDENCE: Timing remains a lower confidence as there is a possibility of a line of storms either slowing, east.

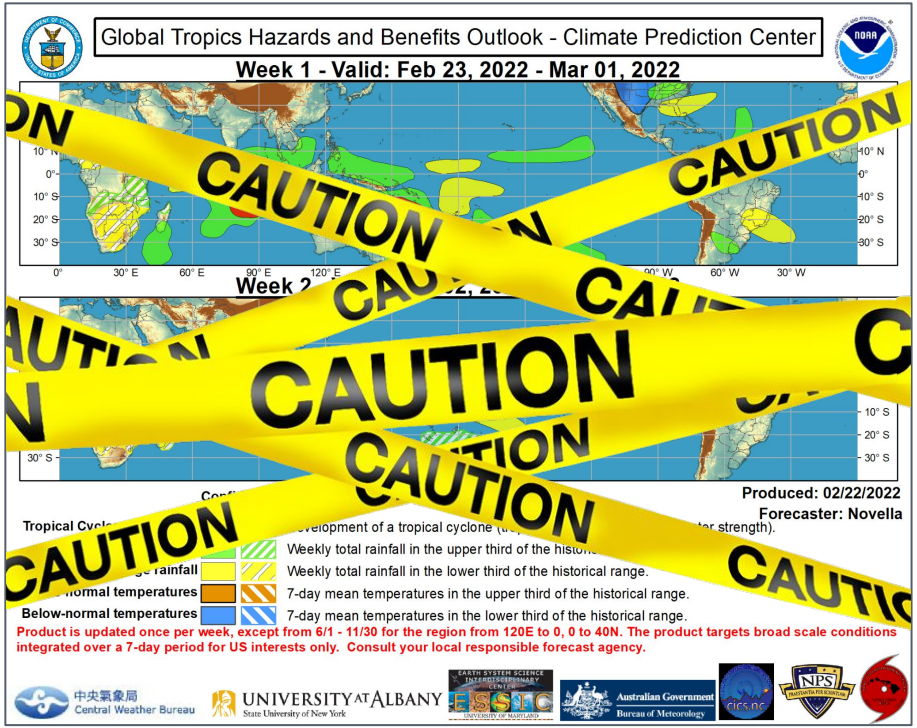
This causes a concern for local training of thunderstorms and for now, low to moderate confidence on location

The images below highlight the threats and impacts expected late Tuesday through Wednesday morning:

GLOBAL TROPICS OUTLOOK
(ISSUED 2X WEEKLY JUNE-NOV)

While the graphic can provide a hint at where tropical development may occur up to two weeks out, it provides no information about the future track nor potential IMPACTS of anything that might develop.

Best used with caution and only as a situational awareness tool.



TIME OF ARRIVAL/DEPARTURE IN HVX

- Right click on a location then choose “Create Wind Timing Report”
- Provides earliest reasonable, most likely and deterministic time of arrival; as well as most likely, latest reasonable, and deterministic time of departure
- Available for both 34kt and 50kt winds

Strong Tropical Storm (50kt/58mph)

		5 day total WSP	81%
TIME OF ARRIVAL	**DATE**	**DAY**	**HOURS**
Earliest Reasonable	8/29 11AM CDT	Sunday	25
Most Likely	8/29 3PM CDT	Sunday	29
Deterministic	No Data	No Data	No Data
TIME OF DEPARTURE	**DATE**	**DAY**	**HOURS**
Most Likely	8/30 12AM CDT	Monday	38
Latest Reasonable	8/30 6AM CDT	Monday	44
Deterministic	No Data	No Data	No Data

RESOURCES

www.weather.gov/neworleans

www.weather.gov/srh/tropical?office=lix

www.nhc.noaa.gov

www.facebook.com/NWSNewOrleans

www.twitter.com/NWSNewOrleans

www.weather.gov/lix/embrief
(includes link to latest briefing slides and recording)

QUESTIONS?!?!

LAUREN NASH
LAUREN.NASH@NOAA.GOV

And last but not least… US! If you're struggling to put together the pieces, give us a call. We're here to help!